

### Remarks

Claims 1-27 are currently pending in the Application and Claims 13-25 are herein withdrawn without prejudice from consideration by the Examiner.

#### Telephone conference

The Applicant thanks the Examiner for the many courtesies extended during the telephone conference held with Attorney Alex Krayner, and the undersigned, Attorney Alessandro Steinfl, on February 7, 2006.

#### 35 U.S.C. §102(b) rejection in view of Enquist (U.S. Patent No. 5,780,880)

Claims 1-12 and 26-27 stand rejected under 35 U.S.C. §102(b) as being anticipated by Enquist. Applicant respectfully disagrees for the following reasons.

#### Claims 1-12

A. Applicant submits that the Examiner has not shown that Enquist discloses, suggests or teaches, *inter alia*, at least the following features recited by Claim 1 of the present application:

“... an emitter ledge layer located above the base layer and below the emitter mesa, the emitter ledge layer having an **intrinsic region located beneath the emitter mesa** ...” (emphasis added)

The Examiner asserts that “an emitter ledge layer” as recited in Claim 1 is disclosed by Enquist’s ledge “15a.” See page 3, line 1 of the Official Action. Applicant respectfully traverses the Examiner’s assertion.

According to Enquist, an emitter layer “15” is formed on a base layer “14.” See Figure 4a and column 6, lines 37-46 of Enquist. Enquist further teaches etching the emitter layer “15” to a predetermined thickness to create the ledge “15a.” See Figure 6 and column 6, lines 51-53 of Enquist. Basically, according to Enquist, the ledge “15a” and the emitter layer “15” are the same layer because the ledge “15a” is etched out of the emitter layer “15.”

Contrary to Enquist, the “emitter ledge layer” as recited in Claim 1 has an “intrinsic region located beneath the emitter mesa.” Applicant respectfully requests that the Examiner “designate as nearly as practicable” where Enquist discloses that the ledge “15a” has a region located beneath the emitter layer “15” as required by 37 C.F.R. §1.104(c)(2).

Applicant submits that the Examiner can not show that Enquist teaches, discloses or suggests “an emitter ledge layer located above the base layer and below the emitter mesa, the emitter ledge layer having an intrinsic region located beneath the emitter mesa” as recited in Claim 1, because the ledge “15a” is etched out of the emitter layer “15” and is not located beneath the emitter layer “15.” Hence, Claim 1 is patentable over Enquist and should be allowed by the Examiner. Claims 2-12, at least based on their dependency on Claim 1, are also believed to be patentable over Enquist.

B. Applicant submits that the Examiner has not shown that Enquist discloses, suggests or teaches, *inter alia*, at least the following features recited by Claim 1 of the present application:

“...the emitter ledge layer having ... extrinsic region ... comprising **depleted** semiconductor material” (emphasis added)

The Examiner asserts that “an emitter ledge layer” as recited in Claim 1 is disclosed by Enquist’s ledge “15a.” See page 3, line 1 of the Official Action. Applicant respectfully traverses the Examiner’s assertion.

According to Enquist, an emitter layer “15” is formed on a base layer “14.” See Figure 4a and column 6, lines 37-46 of Enquist. As stated above, the ledge “15a” and the emitter layer “15” are the same layer because the ledge “15a” is etched out of the emitter layer “15.”

Applicant respectfully submits that the Examiner’s assertion that Enquist’s ledge “15a” is

depleted is improper in view of the subject matter disclosed in Enquist. According to Enquist, it is the base layer “14” that is depleted, not the emitter layer “15.” See column 6, lines 44-45 of Enquist. If the ledge “15a” is etched out of the emitter layer “15,” the ledge “15a” and the emitter layer “15” are made of the same material. How can the ledge “15a” comprise depleted semiconductor material when the emitter layer “15” does not comprise depleted material? Because the ledge “15a” and the emitter layer “15” are made of the same material, the ledge “15a,” just like the emitter layer “15,” is not depleted.

Applicant submits that the Examiner has not shown that Enquist teaches, discloses or suggests “the emitter ledge layer having ... extrinsic region comprising depleted semiconductor material” as recited in Claim 1, because the emitter layer “15” is not depleted. Hence, Claim 1 is patentable over Enquist and should be allowed by the Examiner. Claims 2-12, at least based on their dependency on Claim 1, are also believed to be patentable over Enquist.

#### Claims 26-27

Applicant submits that, at least for the reasons stated above for Claim 1, Enquist does not teach disclose or suggest “the InP-based NPN HBT has a fully depleted emitter ledge layer region disposed” (emphasis added) as recited in amended Claim 26. Hence, Claim 26 is patentable over Enquist and should be allowed by the Examiner. Claim 27, at least based on its dependency on Claim 26, is also believed to be patentable over Enquist.

#### **35 U.S.C. §103(a) rejection in view of Enquist (U.S. Patent No. 5,780,880)**

Claims 1-12 and 26-27 also stand rejected under 35 U.S.C. §103(a) as being obvious in view Enquist. Applicant respectfully disagrees for the following reasons.

#### Claims 1-12

Applicant submits that, at least for the reasons stated above, the Examiner has **not** established a *prima facie* case of obviousness for the claims rejected under 35 U.S.C. §103(a) because Enquist does not teach, disclose or suggest “an emitter ledge layer

located above the base layer and below the emitter mesa, the emitter ledge layer having an intrinsic region located beneath the emitter mesa” and “the emitter ledge layer having ... extrinsic region comprising depleted semiconductor material” as recited in Claim 1. Hence, Claim 1 is patentable over Enquist and should be allowed by the Examiner. Claims 2-12, at least based on their dependency on Claim 1, are also believed to be patentable over Enquist.

#### Claims 26-27

Applicant submits that, at least for the reasons stated above, the Examiner has **not** established a *prima facie* case of obviousness for the claims rejected under 35 U.S.C. §103(a) because Enquist does not teach, disclose or suggest “the InP-based NPN HBT has a fully depleted emitter ledge layer region disposed” as recited in Claim 26. Hence, Claim 26 is patentable over Enquist and should be allowed by the Examiner. Claim 27, at least based on its dependency on Claim 26, is also believed to be patentable over Enquist.

#### **35 U.S.C. §102(b) rejection in view of Yanagisawa (U.S. Pub. No. 2004/0016941)**

Claims 1-12 and 26-27 stand rejected under 35 U.S.C. §102(b) as being anticipated by Yanagisawa that was filed on May 13, 2003. Applicant respectfully disagrees for the following reasons.

Applicant hereby submits a Declaration under 37 C.F.R. §1.131, setting forth that the present invention was conceived no later than October 14, 2002. This Declaration is supported by an Invention Disclosure document that memorializes this date of conception, October 14, 2002. Therefore, Applicant submit that the Yanagisawa document is not in fact a proper 102(e) reference because, in view of Applicant’s date of conception, the Yanagisawa reference does not prove that the invention was known or used by others before Applicant’s invention thereof.

Hence, Claims 1-12 and 26-27 are allowable over Yanagisawa, and Applicant respectfully urges the Examiner to pass all claims to issue.

**35 U.S.C. §103(a) rejection in view of Yanagisawa (U.S. Pub. No. 2004/0016941)**

Claims 1-12 and 26-27 also stand rejected under 35 U.S.C. §103(a) as being obvious in view Yanagisawa that was filed on May 13, 2003. Applicant respectfully disagrees for the following reasons.

In view of the enclosed Declaration under 37 C.F.R. §1.131, setting forth that the present invention was conceived no later than October 14, 2002, Applicant submit that the Yanagisawa document is not in fact a proper 103(a) reference because, in view of Applicant's date of conception, the Yanagisawa reference does not prove that the invention was known or used by others before Applicant's invention thereof.

Hence, Claims 1-12 and 26-27 are allowable over Yanagisawa, and Applicant respectfully urges the Examiner to pass all claims to issue.

The Examiner is encouraged to contact the undersigned to discuss any other issues requiring resolution.

**Conclusion**

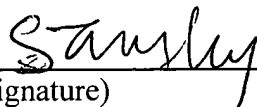
In view of the above, reconsideration and allowance of all the claims are respectfully solicited.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136 (a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

I hereby certify that this correspondence is being deposited with the United States Post Office with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents POB 1450, Alexandria, VA 22313-1450 on

March 27, 2006  
(Date of Deposit)

Shannon Tinsley  
(Name of Person Signing)

  
(Signature)

March 27, 2006  
(Date)

Respectfully submitted,



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Encls:  
Declaration under 37 C.F.R. §1.131;  
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